Cross-Sector Applications & Solutions

Fri. Nov 13, 2026 9:00 AM - 10:30 AM JST | Fri. Nov 13, 2026 12:00 AM - 1:30 AM UTC | Room D (Icho) (3F)

Oral D4 Cross-Sector Applications & Solutions

Chair: Matthew Palmer, Haruka Nishikawa

9:00 AM - 9:15 AM JST | 12:00 AM - 12:15 AM UTC

[X5rLbKi3-01] From Digital Ocean Twin Concepts to Ocean Decade Capability: Competence Development Lessons from SEADOTs

*Harald Hasler-Sheetal[1] (1. International Council for the Exploration of the Sea (ICES) (Denmark))

Digital Twins of the Ocean are central to the ambition of the UN Ocean Decade to make ocean knowledge more accessible, usable, and actionable for sustainable development. As the Ocean Decade-endorsed DITTO programme moves Digital Ocean Twins from concept to capability, an important question is how these systems can become trusted resources for real-world decision-making, not only advanced technical infrastructures.

This contribution uses SEADOTs as a practical example of how competence development can support this transition. SEADOTs develops social-ecological ocean management applications by combining ocean data, ecosystem information, socio-economic data, social-ecological indicators, and scenario-based decision support. The project applies this approach in three demonstrator areas: the Norwegian North Sea, the Southern North Sea, and the Baltic Sea. These cases address challenges with wider international relevance, including offshore energy expansion, fisheries interactions, low-trophic aquaculture, climate pressures, marine spatial planning, and coastal community impacts.

From an Ocean Decade and impact perspective, the demonstrators are not only technical pilots. They are learning environments for testing how users engage with Digital Ocean Twin outputs, where interpretation becomes difficult, and what forms of training, guidance, visualisation, and policy translation are needed for uptake. The contribution highlights three competence areas: conceptual competence, social-ecological competence, and uptake competence.

The main argument is that Digital Ocean Twins become operationally useful when technical development is combined with user competence, institutional uptake pathways, and transparent communication of uncertainty and trade-offs. SEADOTs offers lessons for designing user-driven Digital Ocean Twins that support the Ocean Decade ambition of transformative ocean science for sustainable ocean governance at local, regional, and international scales.

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